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AMSAT NEWS SERVICE
ANS-083

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

In this edition:

* AMSAT Activities at Hamvention 2019
* NASA on the Air
* Satellite Operating Demonstrations Planned for Tucson Hamfest
* Three more 50th Anniversary Certtificates Earned
* "Getting Started" Guide CLoseout
* Canadian Artist To Use HAARP To Transmit SSTV
* ESEO Satellite Commissioning Starts
* FoxTelem Version 1.07 Released
* Sally Ride EarthKAM @ Space Camp's 66th Mission Is Open For Registration
* K6FW Gets 488 Grids
* Upcoming Satellite Operations
* ARISS News
* Shorts From All Over

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ANS-083 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 083.01
>From AMSAT HQ KENSINGTON, MD.
March 24, 2019
To All RADIO AMATEURS
BID: $ANS-083.01

AMSAT Activities at Hamvention 2019

AMSAT Academy
Dayton Amateur Radio Association (DARA) Clubhouse, Dayton, OH
Thursday, 16 May 2019, 09:00 – 17:00 EDT
Come joins us the day before Hamvention, for AMSAT Academy – a unique opportunity to learn all about amateur radio in space and working the FM, linear transponder, and digital satellites currently in orbit.

AMSAT Academy will be held Thursday, May 16, 2019, from 9:00am to 5:00pm, at the Dayton Amateur Radio Association (DARA) Clubhouse,

located at 6619 Bellefontaine Rd, Dayton, Ohio.

Registration Fee includes:

Full day of instruction, designed for both beginners and advanced amateur radio satellite operators, and taught by some of the most accomplished AMSAT operators.
Digital copy of Getting Started with Amateur Satellites, 2019 Edition ($15 value)
One-Year, AMSAT Basic Membership ($44 value)
Pizza Buffet Lunch.
Invitation to the Thursday night AMSAT get together at Ticket Pub and Eatery in Fairborn.

AMSAT Academy 2019 Registration Fee: $85.00. Registration closes May 10, 2019. No sign ups at the door. No refunds, No cancellations.

Registration may be purchased on the AMSAT Store.

AMSAT “Dinner at Tickets”
Tickets Pub & Eatery, Fairborn, OH
Thursday, 16 May 2019, 18:00 EDT
The annual AMSAT (Radio Amateur Satellite Corp.) “Dinner at Tickets” party will be held Thursday at 1800 EDT at Tickets Pub & Eatery at 7 W. Main St, Fairborn, OH. Great selection of Greek and American food and great company! No program or speaker, just good conversation. Food can be ordered from the menu, drinks (beer, wine, sodas and iced tea) are available at the bar. Leave room for dessert, there’s an in-house ice cream shop! Come as you are. Bring some friends and have a great time the night before Hamvention.

ARISS Forum
Forum Room 3
Friday, 17 May 2019, 13:15 – 14:15 EDT
Out of this World Ham Radio via ARISS—Amateur Radio on the ISS

Moderators: Rosalie White, K1STO, ARISS Secretary & USA Delegate, Frank Bauer, KA3HDO, AMSAT Vice President Human Space Flight

ARISS is one of the most unique and fun facets of our hobby. We inspire generations of students and hams through our International Space Station crew and radio connections. In this eye-opening forum, learn about current and future lifelong learning opportunities for hams—via SSTV, APRS, voice repeaters, radio experiments and even robots! Hear how ARISS inspires, engages and educates tens of thousands of students each year in STEAM (science, technology, engineering arts and math) and radio science. See the next generation hardware systems we have in development. Discover how to maximize your opportunities to make ARISS connections and to hear the ISS crew directly from your ham shack. And learn about our visionary initiative to fly ham radio on the human space flight lunar Gateway. Come meet the team that have enabled millions, worldwide, to experience the fun of our amateur radio hobby.

The ARISS team will present an overview and status of the program and then conduct a panel/Q&A session with ARISS panel experts in operations, education, hardware, experimentation and exploration. We also hope to have some surprise guests attending!

TAPR/AMSAT Banquet
Kohler Presidential Center , Kettering, OH
Friday, 17 May 2019, 18:30 EDT
The twelfth annual TAPR/AMSAT Banquet will be held at the Kohler Presidential Center on Friday at 18:30 EDT. This dinner is always a

highlight of the AMSAT (Radio Amateur Satellite Corp.) and TAPR (Tucson Amateur Packet Radio) activities during the Dayton Hamvention.

Tickets ($40 each) may be purchased from the AMSAT store. The banquet ticket purchase deadline is Tuesday, May 14th. Banquet tickets must be purchased in advance and will not be sold at the AMSAT booth. There will be no tickets to pick up at the AMSAT booth. Tickets purchased on-line will be maintained on a list with check-in at the door at the banquet center. Seating is limited to the number of meals reserved with the Kohler caterers based on the number of tickets sold by the deadline.

AMSAT Forum
Forum Room 2
Saturday, 18 May 2019, 12:10 – 13:40 EDT
Moderated by Robert Bankston KE4AL, AMSAT Vice President – User Services

AMSAT Status Report – Joseph Spier, K6WAO, AMSAT President, will highlight recent activities within AMSAT and discuss some of our challenges, accomplishments, projects, and any late breaking news.

AMSAT Engineering – Jerry Buxton, N0JY, AMSAT Vice President – Engineering, will talk about the Fox-1 and Golf (Greater Orbit Larger Footprint) Projects.

AMSAT Education – Alan Johnston, KU2Y, AMSAT Vice President – Educational Relations will introduce the AMSAT CubeSat Simulator.

AMSAT User Services – Robert Bankston, KE4AL, AMSAT Vice President – User Services, will discuss AMSAT's 50th Anniversary Operating Event and the new AMSAT Ambassadors Program.

Amateur Satellite Demonstrations
Outside Main Entrance – Maxim Hall (Building 1)
Friday, Saturday, Sunday 16 – 19 May 2019, 08:00 – 17:00 EDT
Amateur Satellite operation demonstrations will be held outside the main Maxim Hall (Building 1 or E1) entrance. Every day, AMSAT will be demonstrating actual contacts with the operational amateur satellites. We especially want to invite youth to make a contact via an amateur satellite. All are invited to observe, participate and ask questions. Satellite pass times will be posted at the AMSAT booth (1007-1010 & 1107-1110) and in the demo area.

[ANS thanks AMSAT Office for the above information.]

NASA on the Air

In a surprising and touching turnout, tens of thousands of people around the world turned on their ham (or amateur) radios to participate in several "NASA on the Air" events held over the past year. "This was a beautiful thing," said Kevin Zari, head of the amateur radio club at NASA's Kennedy Space Center. Zari especially loved the event photos tweeted by people from different countries.

Radio clubs from 10 NASA centers and the Jet Propulsion Laboratory in Pasadena, California, all supported the yearlong event. Ham radio operators tuned in from all 50 U.S. states and 56 countries across six continents to chat with NASA personnel. "There were times in our log where we had 20 contacts a minute - it was that quick. And there

were other more relaxed times, where we were able to just sit and talk," said Zari. "I don't know how many times people said, 'We thought NASA was gone. We thought NASA was dead.' So we educated people around the world."

The NASA on the Air event wrapped up with three special opportunities for people to use their radios to download images from the International Space Station. This was done in coordination with Amateur Radio on the International Space Station (ARISS), an international consortium of amateur radio organizations and space agencies. ARISS encourages young people to explore science, technology, engineering and math through the use of ham radios, and their program works to connect students worldwide with astronauts onboard the space station.

For the final three events, cosmonauts on the station transmitted several NASA on the Air images from space. Participants could compete to collect images and upload them to a website for credit. Over 34,600 uploads were received from 18,619 participants.

The reaction to NASA on the Air was so positive, NASA Radio Clubs plans to activate NASA on the Air for special anniversaries in 2019 and beyond (e.g. 50th Anniversary of Apollo 11). Follow @NASARadioClubs on Twitter or join the NASA on the Air (NOTA) group on Facebook for notifications of future activities.

[ANS thanks NASA for the above information]

Satellite Operating Demonstrations Planned for Tucson Hamfest

Patrick Stoddard, WD9EWK will have an AMSAT booth at the Radio Society of Tucson's annual spring hamfest on Saturday, March 30, 2019, in Tucson AZ.

WD9EWK will be on satellite passes demonstrating satellite operating from the hamfest. If you hear WD9EWK on the air that morning, please call him and be a part of the demonstrations.

The hamfest site is in grid DM42. QSOs will be uploaded to Logbook of the World after the hamfest. QSL cards are available on request (please e-mail him directly with QSO details if you would like a QSL card).

Also the @WD9EWK Twitter account will send photos and updates during the hamfest. These tweets are viewable in a web browser, even if you do not use Twitter: http://twitter.com/WD9EWK

Hamfest information is available at:
https://rstclub.org/media/hamfest.pdf

[ANS thanks Patrick Stoddard, WD9EWK for the above information]

More 50th Anniversary Certificates Earned

AMSAT has issued 3 more 50th Anniversary certificates to KE8FZT 602, KM4LAO 603, K2MTS 604, VE3CWU 605, N3SL 606, K4WPX 607, KB4PML 608. As of last notice only a couple 50th Certificates were left and then they are gone.

[ANS thanks Bruce KK5DO for the above information]

"Getting Started" Guide CLoseout

We are clearing out the 2018 Getting Started with Amateur Satellites books to make room for the next version debuting at Dayton. Get one, or an extra to give to a friend, for just $15 plus shipping, while supplies last.

This definitive reference is written for the new satellite operator by Gould Smith, WA4SXM, but includes discussions for the experienced operator who wishes to review the features of amateur satellite communications. The new operator will be introduced to the basic concepts and terminology unique to this mode. Additionally, there are many practical tips and tricks to ensure making contacts, and to sound like an experienced satellite operator in the process.

Newly revised in May 2018 with new information on new satellites. It also include information on several satellites of interest to hams expected to be launched in the coming year. Revisions in May 2016 include spiral bound for easier browsing, more new satellites, many more pages and in color.More added in the May, 2017 revision. and More added in the May, 2018 revision.

Buy now https://tinyurl.com/ANS083-GettingStarted

[ANS thanks AMSAT office for the above information.]

Canadian Artist To Use HAARP To Transmit SSTV

Concordia transmission artist Amanda Dawn Christie will use the world’s most capable high-power, high-frequency transmitter HAARP in Alaska to send art around the world and into outer space using Slow Scan TV

Concordia News reports:

In the shadow of Mount Sanford, surrounded by Alaskan wilderness, you’ll find the most powerful radio transmitter on earth.

On this remote site, scientists use a unique tool called the Ionospheric Research Instrument (IRI) to create radio-induced aurora, also known as airglow. But it’s never been used by a Canadian artist to transmit art – until now.

The IRI’s human-made northern lights inspired interdisciplinary artist Amanda Dawn Christie to create Ghosts in the Air Glow: an upcoming transmission art project that will use the IRI to play with the liminal boundaries of outer space.

“I was so fascinated by these airglow experiments – and the relationship between the ionosphere and radio communications – I felt compelled to create an artwork specific to the site and its history,” says Christie, assistant professor in Concordia’s Department of Studio Arts.

She will be embedding her own encoded SSTV images, audio compositions and propagation tests into IRI experiments from March 25 to 28.

Read the full story at
https://www.concordia.ca/news/stories/2019/03/21/concordia-transmission-artist-launches-a-high-frequency-project-in-alaska.html

Artist made a radio out of a kitchen sink
http://www.southgatearc.org/news/2018/december/artist-made-a-radio-out-of-a-kitchen-sink.htm

Amanda Dawn Christie
http://www.
amandadawnchristie.ca/
https://twitter.com/magnet_mountain

For further info on HAARP HF experiments follow Chris Fallen KL3WX
https://twitter.com/ctfallen

[ANS thanks Southgate ARN for the above information.]

ESEO Satellite Commissioning Starts

On Monday, December 3, 2018, the 50 kg ESA Education Office satellite ESEO was launched by Space-X on the Spaceflight SSO-A SmallSat Express mission.

Following the launch from Space Launch Complex 4E (SLC-4E) at Vandenberg Air Force Base, ESEO separated from the launch vehicle and automatically activated the periodic transmission of its telemetry beacon. However, by the time out of a predefined period, having not received commands from the ground station, the spacecraft automatically entered into safe mode.

Some initial communications issues were experienced by ESEO in receiving commands from the ground stations in Forli' (Italy) and Vigo (Spain), but they were resolved when the ESEO team of the Observatory of Tartu offered the possibility to use a ground station in Estonia. This is capable of transmitting with higher power, for a temporary contingent use. The Estonian ground station has been configured to be operated remotely by the ESEO MCC team, which involves students of the University of Bologna.

ESEO then started executing the commands transmitted from ground.

ESEO has now completed the LEOPS (Launch and Early OPerationS) phase of its mission, reaching the platform nominal mode and has begun the process of commissioning the whole satellite: firstly the platform functions, with the payloads functions following.

As part of this commissioning process, but subject to the successful completion of other preparatory tasks of the platform subsystems commissioning, it is anticipated that initial testing of the AMSAT communications payload will be carried out within the next few weeks.

AMSAT-UK will endeavour to provide some advance notice of these tests being undertaken, but the first step will be activation of the 1200 bps BPSK telemetry beacon on 145.895 MHz. The telemetry format matches previous FUNcube missions and data from this beacon will be

forwarded to the FUNcube Data Warehouse using any of the FUNcube dashboards. However, to see the decoded values and graphical displays, please download the dedicated ESEO mission dashboard which is available at
https://download.funcube.org.uk/ESEO_Dashboard_v1177.msi

The payload has, additionally, a high speed, 4800 bps BPSK data format downlink and also a Mode L/V FM transponder both of which will be tested.

Further information about ESEO can be seen at
https://tinyurl.com/ANS083-ESEO

[ANS thanks AMSAT-UK for the above information.]

FoxTelem Version 1.07 Released

Chris Thompson has officially released version 1.07 of FoxTelem. A test version has been out for a while, but it had several issues, including a lower decode rate than 1.06. That prevented release for a while. Those issues (and something like 65 other defects) are now all fixed and this decoder performs better than 1.06. Feel free to test them side by side and report back if that is not the case for you. We are always interested in any comparative results.

In addition to defects in FoxTelem 1.06 and earlier versions of 1.07, this also introduces Doppler calculation with automatic adjustment of the decoder frequency. This is especially useful for decoding beacons and has been helpful in testing for Fox-1A / AO-85 and Fox-1Cliff / AO-95 which are both in SAFE mode. Decoding from Doppler takes a bit of configuration to get right. Have a read of the new sections in the manual or ask for help if you want to give it a try. There are pros and cons vs "Find Signal" for sure.

Version 1.07 changes the core SDR within FoxTelem to use a Numerically Controlled Oscillator (NCO) rather than an FFT Filter for the conversion to base-band. This produces better decodes and will allow the support of wider bandwidth SDRs in the future. The old decoder is available still if needed from the settings screen. Read the manual for details.

Version 1.07 also introduces two new BPSK decoders in advance of the Fox-1E launch. (Chris has no inside information about when that will be, but he has the decoder ready :) Chris also wrote some notes on the comparison between the two decoders, which you can read if you are interested in BPSK decoding performance, or just wonder what I do with my time in the evenings:
http://www.g0kla.com/workbench/2019-03-09.php

The releases are here:
http://amsat.us/FoxTelem/windows/foxtelem_1.07y_windows.zip
http://amsat.us/FoxTelem/linux/foxtelem_1.07y_linux.tar.gz
http://amsat.us/FoxTelem/mac/foxtelem_1.07y_mac.tar.gz

KEY CHANGES in 1.07
~~~~~~~~~~~~~~~~~~
* Ability to add a new spacecraft from the menu. You can also remove them.
* Doppler calculation and tracking as an option instead of "Find Signal"
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* A better SDR based on a Numerically Controlled Oscillator, ready for wider SDRs
* Two new PSK decoders - Costas Loop and Dotproduct
* RTL dongle implemented for testing, though more work to do
* Stops downloading keps when position calc is off
* Allows toggling of high speed / DUV display when in auto mode
* Fixed plotting issues for Earth plots
* Fixes several crashes and bugs
* Fixes copy paste issues with tables
* Respects left/right audio preference when processing wav files
* Implements formats for later spacecraft - Fox-1E and HuskySat
* Linux and Mac launch script updated to locate the JVM (especially on Mac). Please report if when this works/does not work
* MEMS gyro calibration updated
* Fixed a bug where AO-85 data from the server could not be stepped through

And many other bug fixes. Full list of changes here:
https://github.com/ac2cz/FoxTelem/milestone/12?closed=1

Let Chris know any feedback, chrisethompson (at) gmail (dot) com.

[ANS thanks Chris G0KLA / AC2CZ for the above information.]

Sally Ride EarthKAM @ Space Camp's 66th Mission Is Open For Registration

This be will EarthKAM's 66th week-long mission and the second of 2019! Mission 66 runs April 9 through April 12. Mission sign up is available and code words and orbits will be published by 5 p.m. EST Wednesday, April 3. Educators can sign up and get their class involved up to the day of the orbit. Requested images should be available within 24 hours of the orbit. If you are looking for a project to do with the images, look at our activities page for some great ideas that incorporate the images.

For more information on how to make an image request take a look at our User Guide.

www.earthKAM.orgion]

[ANS thanks Sally Ride EarthKAM for the above information.]

K6FW Gets 488 Grids

Frank Westphal K6FW, announced, via twitter that he has now completed the 488 grid award. "Thanks to Don kb2ysi for FN51 which is the last grid I need for the 488 grid award. My first grid confirmed was KA5SMA, EM66 on 02-14-1992. 27+ years from start to finish. I am the tortoise not the hare! Thanks to all the other rovers over the years to make this happen."

[ANS thanks Frank K6FW for the above information]

Upcoming Satellite Operations

Eureka Nunavut (ER60, EQ79) – February 3, to March 29, 2019
Eureka ARC, VY0ERC, will be QRV from Eureka, NU (NA-008), February 3 until March 29, 2019. Time and weather permitting, they expect to be on the FM satellites from ER60 and EQ79. Announcements will be posted on Twitter at https://twitter.com/vy0erc.

Key West, FL (EL94) – March 18-21, 2019
Adam, K0FFY, will be in Florida Keys on March 18 through 21, activating EL94 vacation-style. Adam's taking his linear gear to see who he can hear East and South of that location If you still need EL94 please send direct message or email. Otherwise, he'll be announcing on Twitter https://twitter.com/K0FFY_Radio

Eastern Mass (FN51) – March 20, 2019
Don, KB2YSI, will be in FN51 on Wednesday, March 20th, starting with 1945z CAS-4A until 0233z SO-50. Will operate fixed 2m frequency on linears and still learning, so be patient. Keep an eye on Don's Twitter feed for additional announcements https://twitter.com/kb2ysi.

XE Mexico Special Event – March 21-24, 2019
Mexican amateurs will operate the following special event stations from the 21st to 24th to mark the Equinoccio Maya 2019: 4A3MAYA – Museo de Antropologia Regional, Tabasco 4B3MAYA – Merida, Yucatan 4C3MAYA – Champoton, Campeche 6E3MAYA – Quintana Roo 6F3MAYA – Chiapas. QRV on HF, 6m, and via satellite. QSL via bureau.

Curaçao (FK52) – March 26-31, 2019
Nathan, K4NHW, will be operating as PJ2/KN4HW from Curaçao, March 26th to 31st. Primarily FM, but Nathan may try some SSB, as well. If you need a sked, let him know. He's good on QRZ.

Ontario (EN93,EN94,FN03, FN04) – March 28, 2019
Ron, AD0DX, with his tire still warm from his last roving trip, is heading to Ontario, March 28th for a one day, four grid, special. Ron will tweet passes the day of the rove, which will most likely be morning passes. Follow Ron on his journey at https://twitter.com/ad0dx

Liechtenstein (JN47) – April 17-19, 2019
Phillippe, EA4NF, is off on another DXpedition. This time, he is heading to HB0/Lichtenstein. Phillippe will operate under the call sign HB0/EA4NF from Leichtenstein and HB9/EA4NF from Switzerland (JN47s, on both FM and SSB satellites. QSL via LoTW. Updated info & Pass announcements (Time+Frequencies) available on Twitter: https://twitter.com/EA4NF_SAT

Northern Border Security Check (Minnesota to Washington) – April 29 to May 4 or 5th, 2019
Alex, N7AGF, is all set for his semiannual rover trip to activate rare and somewhat rare grids, from April 29th to May 4th or 5th (or longer depending on how things go). Alex will fly into Minneapolis and drive back to my home grid CN88, activating as many ENx8,ENx7,DNx8,and DNx7 grids as possible along the route. The hope is to hit many corners and lines.

Alex will be on both linear and FM birds.

As always, activations and route details will be posted to his Twitter @N7AGF at https://twitter.com/N7AGF . Alex will also be on

APRS at https://aprs.fi/N7AGF-10 . In areas of limited cell service,
he'll be using inReach.

Email or hit Alex on twitter with grid requests, route suggestions,
or hot tourist attractions in Minot.
Please submit any additions or corrections to ke4al (at) amsat.org

See
https://www.amsat.org/satellite-info/upcoming-satellite-operations/

[ANS thanks Robert KE4AL for the above information]

ARISS News

+ ARISS contact between North Point School for Boys, Calgary, Alberta,
Canada, and astronaut David St-Jacques KG5FYI using ISS callsign
OR4ISS, was successful. Contact began Wed 2019-03-20 20:16:09 UTC and
lasted about 9 and a half minutes, Contact was telebridge via IK1SLD.

Upcoming ARISS Contact Schedule

Khabarovsk University, Khabarovsk, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled astronaut is TBD
Contact is a go for 2019-03-26 UTC

Ulluriaq School, Kangiqsualujjuaq, QC, Canada, via LU8YY
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is David St-Jacques KG5FYI
Contact is go for: Thu 2019-03-28 16:14:54 UTC

[ANS thanks ARISS, Charlie AJ9N and David AA4KN for the above
 information]

Shorts From All Over

+ NY Times article about cubesats/
  https://www.nytimes.com/2019/03/18/science/cubesats-marco-mars.html

  [ANS thanks JoAnne K9JKM for the above information]

+ ES'HAIL-2: HAMS GET THEIR FIRST GEOSYNCHRONOUS REPEATER

  https://tinyurl.com/ANS083-ESHAIL-Repaeter

  [ANS thanks Mark KØJM for the above information]

+ CubeSat] CubeSat Job Opening

  Please see below for a postdoctoral fellowship opening for a CubeSat
  project. Please forward to anyone you think may be interested. The
  job will be posted on the HR site (jobs.rhodes.edu) shortly. I will
  be at the workshop next month and can meet with any interested
  persons.

  [ANS thanks Ann M. Viano, Ph.D., Rhodes College for the above

information]

+ New HackSpace magazine available for download
Issue 17 of the free magazine HackSpace features Long-range radio communications made easy with LoRa

This issue includes:

- Long-range radio communications made easy with LoRa
- Adafruit (Limor Fried AC2SN) Feather M0 RFM96 LoRa Radio 433 MHz
- Jo Hinchliffe MW6CYK describes how to lay out a simple PCB in KiCad
- Go further together by Dr Lucy Rogers M6CME

Download the free PDF of HackSpace issue 17 April 2019 from https://hackspace.raspberrypi.org/issues

[ANS thanks Southgate ARN for the above information.]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, AA8EM
aa8em at amsat dot org